

Amendments to the Claims: This listing of claims will replace all prior versions, and listings, of claims in the application

Listing of Claims:

1. (Currently Amended) A lens-attached light-emitting element comprising:

a light-emitting element having a light-emitting area on a semiconductor substrate, the light-emitting area having a shape an approximately U-shape including a plurality of three line segments ~~and one or more~~that form two intersections of line segments;

an antireflection film covering the light-emitting area; and

a lens formed on the surface of the antireflection film on the light-emitting element,

wherein the lens comprises ~~a cylindrical portion~~three cylindrical portions disposed ~~coaxially on each of the~~respective line segments of the light-emitting area ~~and a spherical portion, two spherical portions~~ disposed concentrically on each of the one or more ~~respective~~ intersections of line segments of the light-emitting area, and two spherical portions disposed concentrically on respective ends of the line segments not forming the two intersections.

2. - 4. (Cancelled)

5. (Currently Amended) The lens-attached light-emitting element according to ~~claim 2, 3 or 4~~claim 1, wherein the composite lens is made of resin.

6. (Original) The lens-attached light-emitting element according to claim 5, wherein the antireflection film is one-layer film, and the refractive index thereof has an intermediate value between that of the light-emitting area and that of the resin forming the composite lens.

7. (Original) The lens-attached light-emitting element according to claim 6, wherein the antireflection film consists of silicon nitride.

8. (Currently Amended) A lens-attached light emitting element comprising:

a light-emitting element having a light-emitting area, the light-emitting area having a shape an approximately U-shape including a plurality of three line segments ~~and one or more~~that form two intersections of line segments; and

a composite lens provided on the light-emitting element;

wherein the composite lens ~~consists of a cylindrical portion~~comprises three cylindrical portions disposed ~~coaxially on each of the~~respective line segments of the light-emitting area ~~and a spherical portion, two spherical portions~~ disposed ~~concentrically on each of the one or more~~respective intersections of line segments of the light-emitting area, ~~and two spherical portions disposed concentrically on respective ends of the line segments not forming the two intersections.~~

9. - 10. (Cancelled)

11. (Currently Amended) The lens-attached light-emitting element according to ~~claim 8, 9 or 10~~claim 8, wherein the composite lens is made of resin.

12. (Original) A lens-attached light-emitting element array, comprising a plurality of lens-attached light-emitting elements arranged in a straight line, the lens-attached light-emitting element being recited in claim 1 or 8.

13. (Original) The lens-attached light-emitting element array according to claim 12, wherein the light-emitting element is a light-emitting diode.

14. (Original) The lens-attached light-emitting element array according to claim 12, where the light-emitting element is a light-emitting thyristor.

15. (Original) A self-scanning light-emitting element array, comprising a lens-attached light-emitting element array recited in claim 14.

16. (Currently Amended) A method for manufacturing a lens-attached light-emitting element, comprising the steps of:

- (a) preparing a light-emitting element array substrate;
- (b) preparing a glass substrate;
- (c) forming a etching stopper film on the glass substrate;
- (d) forming an opening array in the etching stopper film;

(e) forming an array of recesses in the glass substrate under the opening array by wet etching, each recess having a shape an approximately U-shape including a plurality of three line segments and one or more that form two intersections of line segments, each recess including a cylindrical concavity comprising three cylindrical concavities disposed coaxially on each of the respective line segments of the recess and a spherical concavity, two spherical concavities disposed concentrically on each of the one or more respective intersections of line segments of the recess, and two spherical concavities disposed concentrically on respective ends of the line segments not forming the two intersections;

(f) fabricating a mold by removing the etching stopper film on the array of recesses;

(g) coating a photo-curing resin on the surface of at least one of the recesses of the mold and the light-emitting element array substrate;

(h) contacting the mold and the light emitting element array substrate to each other with sandwiching the photo-curing resin therebetween and pressing to each other develop the photo-curing resin therebetween;

(i) irradiating light to the photo-curing resin from the side of the mold to cure the photo-curing resin at the portion where the etching stopper film is previously removed;

(j) separating the mold from the light-emitting element array substrate; and

(k) removing the uncured photo-curing resin on the light emitting element array substrate by cleaning.

17. (Withdrawn) A method for manufacturing a lens-attached light-emitting element, comprising the steps of:

(a) preparing a light-emitting element array substrate, the predetermined portion thereof being masked by a tape;

(b) preparing a glass substrate;

(c) forming a etching stopper film on the glass substrate;

(d) forming an opening array in the etching stopper film;

(e) forming a recess array in the glass substrate under the opening array by wet etching;

(f) fabricating a mold by removing the etching stopper film on the recess array;

(g) coating a photo-curing resin on the surface of at least one of the recess array of the mold and the light-emitting element array substrate;

(h) contacting the mold and the light emitting element array substrate to each other with sandwiching the photo-curing resin

therebetween and pressing to each other develop the photo-curing resin therebetween;

(i) Irradiating light to the photo-curing resin from the side of the mold to cure the photo-curing resin;

(j) separating the mold from the light-emitting element array substrate; and

(k) peeling off the tape from the light-emitting element array substrate to remove the uncured photo-curing resin on the tape.

18. (Withdrawn) The method for manufacturing a lens-attached light-emitting element according to claim 17, wherein the predetermined portion is a portion including a bonding pad.

19. (Withdrawn) The method for manufacturing a lens-attached light-emitting element according to claim 17, wherein the tape is a both-side adhesive resin tape, on both side thereof an adhesion being provided, an adhesion on one side thereof losing its adhesiveness when light is irradiated.

20. (Withdrawn) The method for manufacturing a lens-attached light-emitting element according to claim 17, 18 or 19, wherein

the step (a) including,

preparing a second glass substrate,

drawing a masking pattern on the surface of the second glass substrate,

pasting the both-side adhesive tape to one surface of the second glass substrate,
cutting out the both-side adhesive tape along the masking pattern to remove unnecessary portion not to be used as a mask,

pasting the second glass substrate to the light-emitting element array substrate with the both-side adhesive tape being opposed thereto,

loosing the adhesiveness between the second glass substrate and the both-side adhesive tape by irradiating light from the side of the second glass substrate to remove the second glass substrate.

21. - 22. (Cancelled)

23. (Original) The method for manufacturing a lens-attached light-emitting element according to claim 16, further comprising the step of coating a mold releasing agent on the surface of the recess array after the step (f).

24. (Original) The method for manufacturing a lens-attached light-emitting element according to claim 16, wherein the step (i) includes the step of making ultra violet or visible light to approximately collimated light and irradiating the collimated light approximately perpendicular to the glass substrate.

25. (Original) The method for manufacturing a lens-attached light-emitting element according to claim 16, wherein the etching stopper film is a Cr film, and the glass substrate is wet etched by a hydrofluoric acid based etchant.

26. (Original) The method for manufacturing a lens-attached light-emitting element according to claim 16, further comprising the step of cutting the light-emitting element array substrate after the step (k).

27. (Withdrawn) The method for manufacturing a lens-attached light-emitting element according to claim 17, further comprising the step of coating a mold releasing agent on the surface of the recess array after the step (f).

28. (Withdrawn) The method for manufacturing a lens-attached light-emitting element according to claim 17, wherein the step (i) includes the step of making ultra violet or

visible light to approximately collimated light and irradiating the collimated light approximately perpendicular to the glass substrate.

29. (Withdrawn) The method for manufacturing a lens attached light-emitting element according to claim 17, wherein the etching stopper film is a CR film, and the glass substrate is wet etched by a hydrofluoric acid based etchant.

30. (Withdrawn) The method for manufacturing a lens-attached light-emitting element according to claim 17, further comprising the step of cutting the light-emitting element array substrate after the step (k).

31. (Currently Amended) The method for manufacturing a lens-attached light-emitting element according to claim ~~16 or 17~~, wherein the light-emitting element array substrate is a light-emitting diode array substrate.

32. (Currently Amended) The method for manufacturing a lens-attached light-emitting element according to claim ~~16 or 17~~, wherein the light-emitting element array substrate is a light-emitting thyristor array substrate.

33. (Currently Amended) The method for manufacturing a lens-attached light-emitting element according to claim ~~16 or 17~~, wherein the light-emitting element array substrate is a self-scanning light-emitting element array substrate.

34. (Currently Amended) The method for manufacturing a lens-attached light-emitting element according to claim ~~16 or 17~~, wherein the light-emitting element array substrate includes an antireflection film covering the light-emitting area of each light-emitting element.

35. - 37. (Cancelled)